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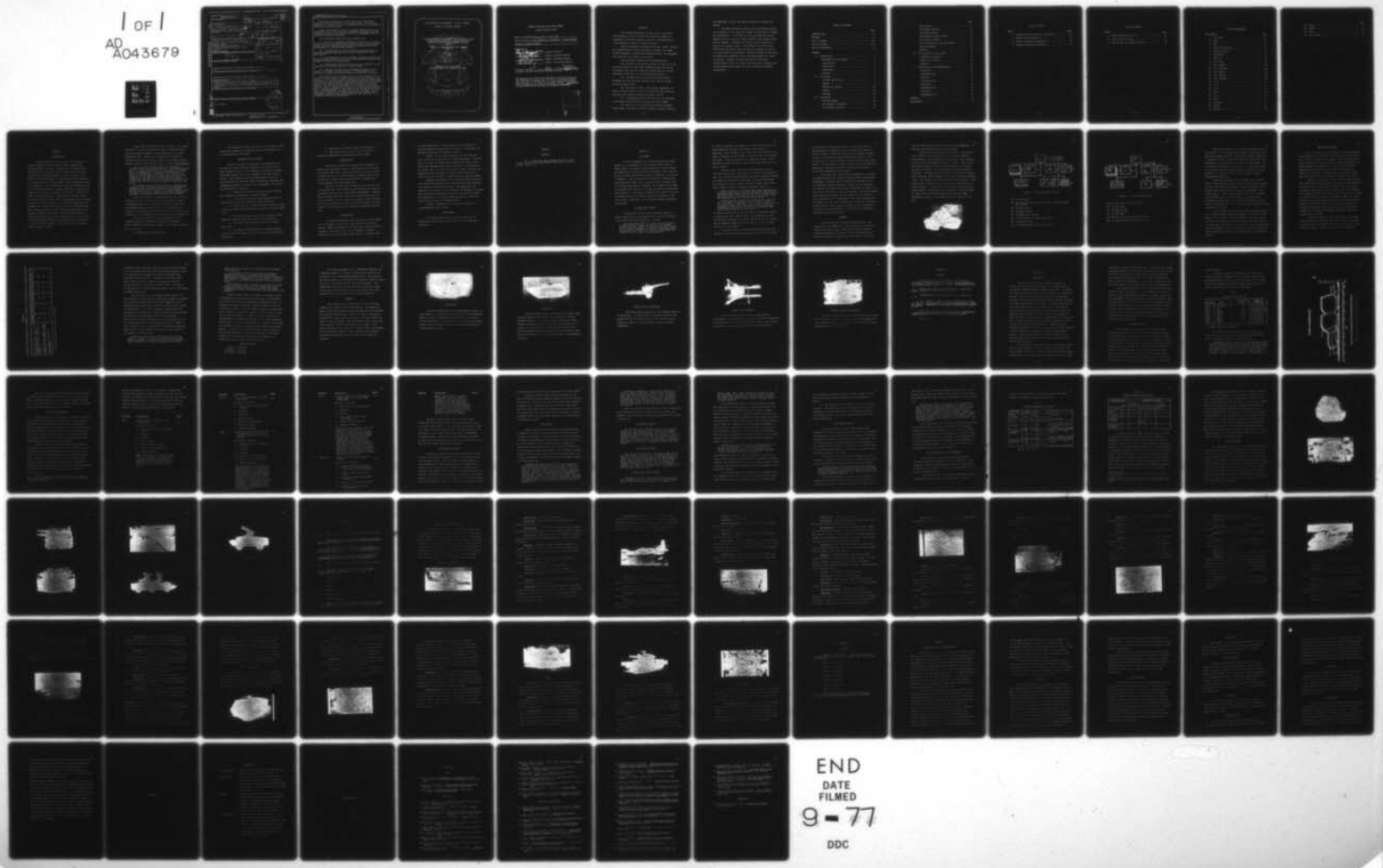

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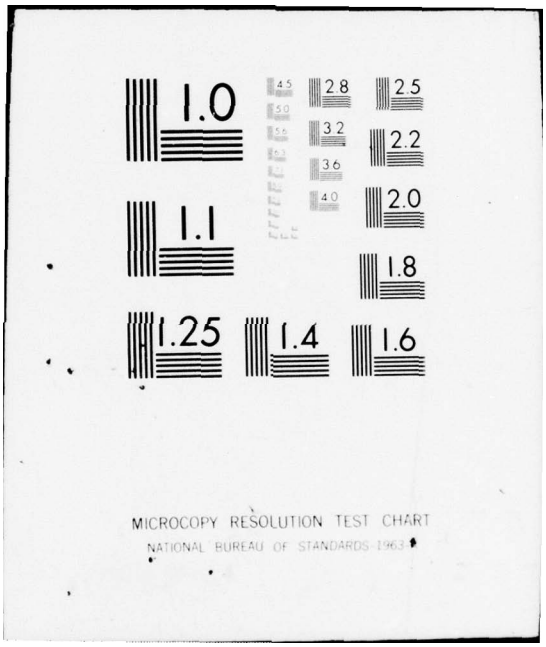
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The problem undertaken in this thesis is to determine whether or not the Forward Air Controller (FAC), as currently trained and equipped, would be a viable factor in a mid-intensity conflict in Central Europe.

Areas investigated included the Soviet threat, terrain and climatological factors prevalent in Europe, the number of FACs assigned to support Army maneuver units, the equipment they use, and the training they receive.

The conclusions drawn from this analysis are:

(1) The FAC is improperly trained, in that he is not provided sufficient ground FAC training during the initial training period, and the airborne training does not present survivable techniques for a mid-intensity conflict.

(2) The FAC does not receive sufficient ground training with the supported maneuver unit once he reaches his final destination.

(3) The airborne FAC is not properly equipped, in that the OV-10 aircraft could not survive the vast array of surface-to-air weapons available to Soviet forces.

(4) Standardized armored vehicles are not available to the ground FAC for either training or actual combat.

(5) Based on the tactics and procedures presently being taught, the number of FACs available in Europe today is not sufficient to meet the demand created by a conflict in Europe.

The United States Air Force is at a critical juncture in its conduct of the close air support mission run by forward air controllers. If the Army is to be provided the type of support they are currently being promised, then several areas must be changed. Training and tactics must be upgraded to reflect the current threat. The FAC must be provided with both aerial and ground vehicles that are designed to survive in a mid-intensity environment. Adequate numbers of FACs must be trained and available to meet the requirements of a short notice war. Finally, the Army and the Air Force must realistically review the threat, and establish a strong, well trained combined arms team that will accomplish doctrinal requirements.

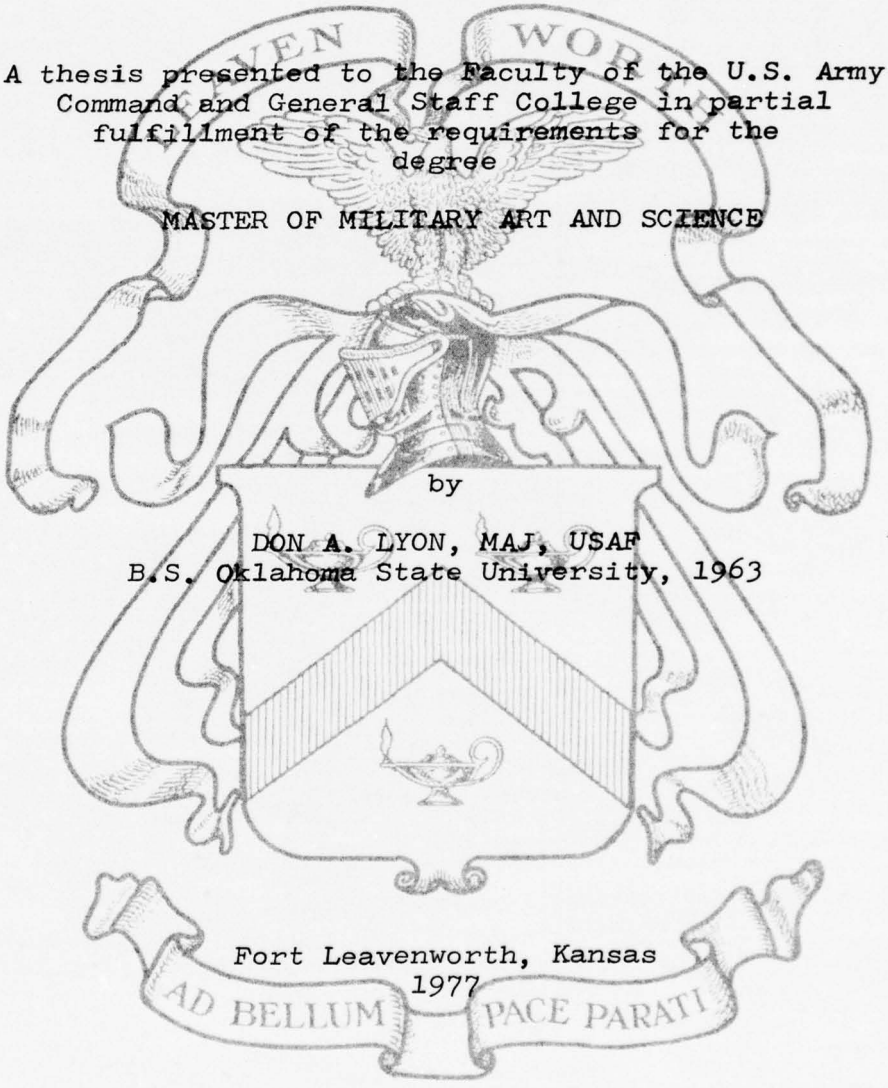
THE FORWARD AIR CONTROLLER: IS HE A VIABLE FACTOR IN CENTRAL EUROPE?

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE

by

DON A. LYON, MAJ, USAF
B.S. Oklahoma State University, 1963



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The opinions and conclusions expressed herein are those of the individual student author and do not necessarily represent the views of either the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

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CHAPTER I

INTRODUCTION

The United States is committed to the defense of Europe through the North Atlantic Treaty Organization. Combined NATO forces pose a deterrent to the Soviet Union and Warsaw Pact countries with the United States Army and Air Force providing key elements of this deterrent force. There is no certain method of determining whether an attack in Central Europe will occur after a long, discernible build-up or whether it will be launched with little advanced warning. If the worst case is assumed, NATO must be prepared to defend with the forces currently in position. There will be little time to reinforce or reequip and no time to train. For these reasons, an even closer relationship must be formed between U.S. military forces. The lessons learned from the Vietnam War and more specifically from the 1973 Middle East War, clearly indicate the ever increasing importance of an effective combined arms team. This is evident since the greatest destruction of Israeli tanks occurred at the outset of the 1973 Middle East War, when armored forces attempted to operate without adequate fire support from air and dismounted infantry forces.

Since Soviet doctrine and tactics appear to be clearly defined, it is safe to assume the threat in Central Europe will be at least as great as that experienced in the 1973 Middle East War. Colonel A. A. Sidorenko, a Director of Military Science and a faculty member at the Frunze Military Academy, states in the introduction to his book, The Offensive,

> The century-old military history, including the history of the Soviet Armed Forces, is convincing evidence that in an armed conflict of any scale--be it an engagement of podrazdeleniye, chast, or soyedineniye, or a battle of operational ob vedineniye only the offensive leads to the attainment of victory over the enemy. The offensive is the only type of combat actions of the troops, the employment of which attains the complete rout of the enemy and the seizure of important objectives and areas.
>
> The essence of the offensive consists of having the troops that are conducting it destroy the enemy with all available means and exploiting the results obtained, advance swiftly into the depth of his disposition, destroy and capture personnel, armament, and combat equipment belonging to the enemy, and seize specific territory.[1]

Since an invasion of Eastern Europe by U.S. forces is unlikely, initial U.S. entry into a mid-intensity conflict in Central Europe will be defensive in nature. Faced with overwhelming numerical superiority in both personnel and equipment, the strength of our defense will lie in part in the training of our personnel and the employment of our equipment.

In order to survive the initial assault, it is imperative that U.S. Air Force personnel be prepared to provide immediate and decisive support to U.S. Army personnel.

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*See Appendix A for definitions.

The quality of Tactical Air Control Party (TACP) training and the employment of TACP personnel and equipment will be investigated in this paper.

STATEMENT OF THE PROBLEM

Present personnel and equipment authorizations for Tactical Air Control Parties (TACPs) are contained in Air Force Regulation 55-33. This regulation specifies a standardized TACP package that is not adequate in the NATO Central Region. This research identifies weaknesses in U.S. Air Force Forward Air Controller (FAC) training and equipment and recommends measures to correct these weaknesses. The following areas will be examined:

a. Comparison of United States and Soviet doctrine and capabilities applicable to Central Europe.

b. A review of terrain and climatological data for Central Europe and their bearing on FAC operations.

c. A review of the current training programs provided to FACs to determine their adequacy in both the air and ground roles.

d. The number, grade, and Air Force Specialty Code (AFSC) of personnel required to support each Army unit.

e. The type of FAC aircraft required to support Army units.

f. The number of FACs required to support armored cavalry units when those units are performing covering force operations.

g. Feasibility of employing FACs in helicopters.

h. Requirement for an armored combat vehicle to replace the MRC-107/108 Communications Central jeep.

DELIMITATIONS

This thesis concerns the training and employment of Forward Air Controllers only in Central Europe, specifically in the Fulda Gap area. Tactics and doctrine will be limited to those used by U.S. forces against a probable Soviet force and will not include detailed descriptions of Warsaw Pact actions against the entire NATO front.

The exact tactics used by Soviet forces and the size of the force that could attack in Central Europe are areas of continued discussion and considerable disagreement. Numerous Army documents have been reviewed and information extracted with no attempt to either prove or disapprove their validity. This review covered both classified and unclassified sources; however, this thesis will be limited to unclassified sources only.

METHODOLOGY

As currently organized and equipped, Air Force TACPs are not prepared to meet the threat presented in Central Europe. While some progress has been made, current training, equipment, and tactics will not be adequate to operate effectively in an environment where enemy air defenses have

not been neutralized. For the purpose of this research, a Central European scenario will be reviewed to show where the greatest threat and our weaknesses exist.

Chapter II will analyze present United States and Soviet doctrine and capabilities in Central Europe. Included also is a study of terrain and climatological factors that affect the employment and relative success of both airborne and ground FACs. A close look at Soviet weapon systems, and capabilities and the number of these systems opposing U.S. forces, will be provided to clearly show the existing threat.

Chapter III evaluates the training currently received by the FACs both during initial training and during continuation training received in the unit. An analysis of the surface-to-air threat will be presented to determine if current FAC tactics and training are sufficient to meet this threat. The organization of a typical TACP will also be discussed along with the source of augmentee FACs.

Chapter V summarizes the study and presents the recommendations which result.

DEFINITIONS

For reader convenience, technical terms will be explained either at their point of use or in the glossary, Appendix A.

CHAPTER I

ENDNOTES

[1]A. A. Sidorenko, The Offensive (A Soviet View), trans. U.S. Air Force (Washington: Government Printing Office, 1974), p. 1.

CHAPTER II

THE THREAT

To fully understand the threat presented in Central Europe, it is necessary to review several basic factors. These include an evaluation and comparison of United States and USSR basic doctrine, tactics, and weapons plus a limited study of terrain and expected weather conditions. As stated in Chapter I, this review will be limited to a Soviet Combined Arms Army (CAA) versus a United States covering force in the Fulda Gap region of Germany. No attempt will be made to correlate the actions of the CAA with those of the Frontal Army; however, if additional information is desired, a review of USAITAD Report No. 14-U-76, Military Operations of the Soviet Army, 25 May 1976, will provide excellent background information.

DOCTRINE AND TACTICS

As previously stated, Soviet doctrine places the utmost importance on the offense as the critical ingredient to successful military operations. In fact,

> The predominant theory of Soviet tactical doctrine is that decisive results are achieved only through offensive action. When circumstances and enemy actions force a Soviet commander to assume a defensive posture, he is expected to seize the initiative and resume the offensive at the earliest moment possible.[1]

In order to maintain the offensive, the Soviets can deploy in many formations; however, the combined arms concept is essential to the success of all. The motorized rifle division (MRD) is perhaps the most effective tactical unit for sustained operation. A CAA will normally be composed of three to four MRDs and one tank division. These will be discussed later in greater detail.

A Soviet attack is based on several basic premises. The first is surprise. While there is belief in some quarters that U.S. forces in Central Europe will have sufficient warning to prepare for an attack, others hold opposing, and perhaps more realistic, views. Senator Sam Nunn (D-GA), upon return from a Senate mission to Germany, expressed this view:

> Nunn, a member of the Senate Armed Services Committee, has questioned current strategy that assumes NATO forces would have about three weeks of warning of a Soviet attack and could fight a holding action for up to 60 days while reinforcements flow in from the United States.
>
> Rejecting these assumptions as unrealistic, Nunn has said the Warsaw Pact armies, credited with a nearly 3-to 1 advantage in tanks and a 2 to 1 edge in artillery, are prepared to wage a short war after only a few days of intelligence warning with the aim of overwhelming NATO forces before they can be built up.[2]

It should be pointed out that the figures given above relate to Warsaw Pact versus NATO forces. The advantage in tanks and artillery achieved by a Soviet CAA versus the U.S. Armored Cavalry Regiment (ACR) could be as high as 5 to 1 in tanks and 10 to 1 in artillery.

Two other closely related offensive tactics are the massing of forces and the employment of units in two echelons.

In the attack, the CAA will strike on a narrowed front of approximately 30 kilometers, with at least two divisions in the 1st echelon. These two divisions will normally be MRDs; however, if terrain and enemy defenses will allow, a tank division will be used to provide the extra mobility and shock effect. At the point of initial contact, the 1st echelon will narrow even further (4-8 km per division) in an attempt to provide an overwhelming combat ratio.

The attack will invariably be preceeded by a massive artillery preparation. Based on current Soviet training and technology, the attack can be conducted at any hour of the day under any weather conditions. There are no provisions for slowing an attack during hours of darkness, in fact, this may be the preferential time for an attack. The first echelon will penetrate as deeply into the enemy lines as possible while bypassing enemy strongpoints. The second echelon will be committed if the first echelon meets determined resistance, overextends its supply lines, or receives heavy casualties. The expected rate of advance for the division is 70-100 Km during the first 24-48 hours.[3]

WEAPONS

In reviewing the firepower associated with a CAA consisting of four MRDs and a tank division, it is important to keep one fact in mind. Since Soviet doctrine usually requires employment in echelons, and the main battle area will be too narrow to support an entire CAA, it is unlikely

that the entire force will be met in a single engagement. In any case, the firepower will be considerable.

Each MRD has approximately 11,500 men. The maneuver units consist of three motorized rifle regiments (MRR), a tank regiment, and a separate tank battalion. This provides a total of 255 T-62 medium tanks per division. (See picture #1 for specifications on the T-62 and Figure 1 for specifications on the MRD.) The tank division has approximately 9,000 men. The maneuver units consist of three tank regiments and a motorized rifle regiment with a total of 325 T-62 medium tanks. (See Figure 2 for Tank Division specifications.) This gives a CAA a minimum of 1,345 T-62 medium tanks when it is fully equipped. In addition, each division is supported by approximately 72 artillery pieces ranging in size from 122mm to 152mm, plus 18 122mm Multiple Rocket Launches (MRL). Additional artillery is available and under control of the CAA.

T-62

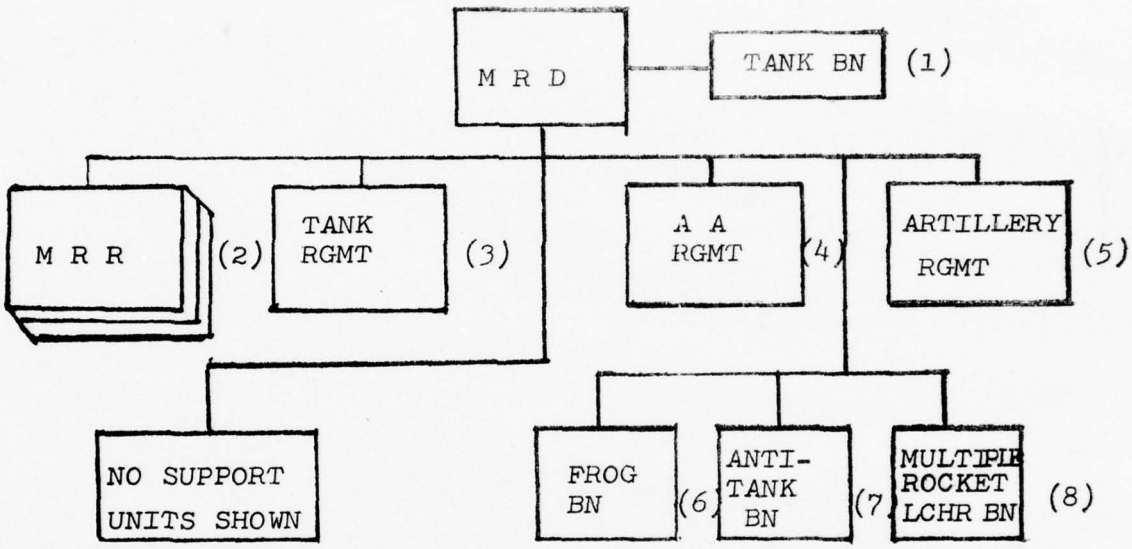


Figure 1. Motorized Rifle Division

(1) 40 T-62 tanks.

(2) 40 T-62 tanks each (120 total) plus 6 122mm HOW/RGMT (18 total).

(3) 95 T-62 tanks.

(4) 24 57mm A/A Guns

(5) 36 122mm HOW, 18 152mm.

(6) 4 Free rocket over ground launchers.

(7) 18 100mm at Guns.

(8) 18 122mm launchers (40 rockets each).

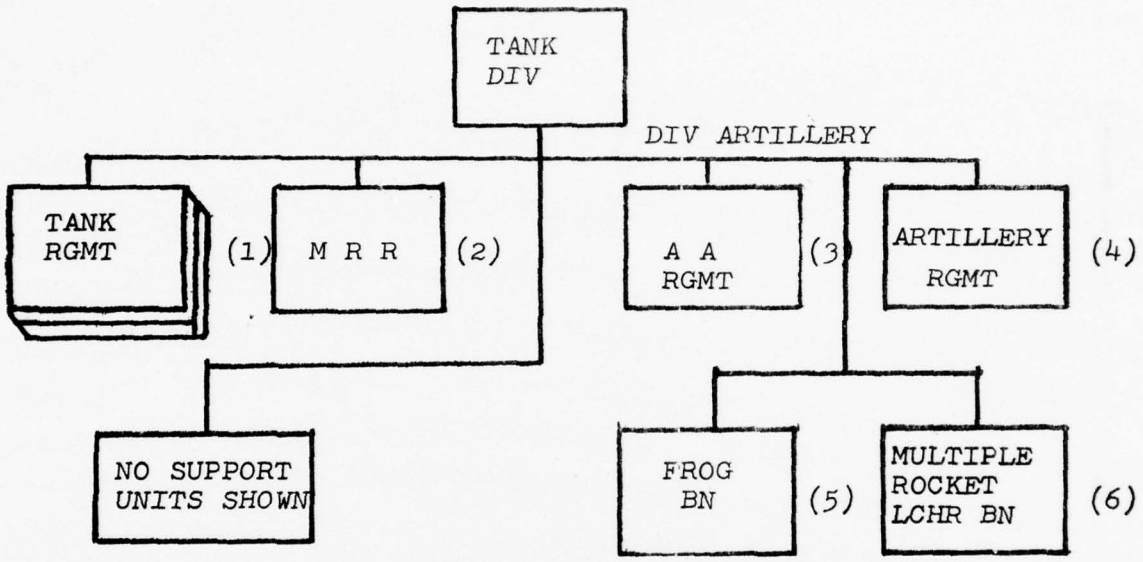


Figure 2. Soviet Tank Division.

(1) 95 T-62 tanks each (285 total).

(2) 40 T-62 tanks.

(3) 24 57mm A/A Guns.

(4) 54 122mm HOW.

(5) 4 Free rocket over ground launchers.

(6) 18 122mm launchers (40 rockets each).

The T-62 is widely used in Soviet tank and motorized rifle units. It is equipped with infrared night-driving and sighting equipment and has a deep-fording snorkel capability. It possesses a fully stabilized, 115mm gun which fires a fin stabilized round to an effective range of 2,000 meters. The only serious limitation to the T-62 is its small basic load of 40 rounds which could create logistic problems during an offensive. It carries a crew of four and has a range of approximately 310 miles.

A realistic scenario would probably put the United States covering force, composed of an armored cavalry regiment and four tank battalions, against a Soviet MRD in the first echelon with a tank division in the second echelon. This would provide a total of approximately 4,875 U.S. personnel and 267 M60A1 tanks to oppose a force of 20,500 Soviet personnel and 580 tanks. The overall United States deficit would be decreased some by the 81 M555 armored assault vehicles possessed by the ACR.

The covering force has several basic missions to conduct without becoming decisively engaged. They must attrite enemy forces, attempt to force the enemy to deploy its main forces, force the enemy to mass artillery, and gain time for the units that will fight the main battle. The covering force must be prepared to fight a very mobile defense in which the rapid acquisition and killing of enemy armor is of paramount concern.

WEATHER AND TERRAIN

Two of the most critical aspects of acquiring targets and obtaining kills with direct fire weapons are visibility and the time of flight of the weapon. Although smoke in the battle area will be a major factor in acquiring targets at a range suitable for engagement, it will not be considered simply because no definitive method has been devised to measure its intensity. Several excellent studies, however, have been conducted on the effects of weather and terrain.

Weather will obviously affect airborne FAC operations most significantly while ground operations will be influenced most by terrain characteristics. Since there is no way to accurately judge a worst case situation, i.e., poor weather and difficult terrain, two studies will be reviewed to provide an overall picture of typical conditions. Based on a study provided to the Senate Armed Services Committee in hearings before the Special Subcommittee on Close Air Support in October and November, 1971, the following table provides a summary of the average ceiling and visibility conditions encountered in Germany.

During the period January through March in Germany about 28 percent of the days have cloud ceilings less than 1,000 feet above the ground and visibility equal to or less than three miles. Another 27 percent of the days have

Table 1

Average Ceiling Visibility in Germany[1] *(Percent of days when these conditions occur.)*

	JAN/MAR	APR/JUN	JUL/SEP	OCT/DEC	DEC ONLY
Ceiling less than 1,000' and/or visibility less than 3 miles.	28	8	11	35	42
Ceiling and vis greater than 1,000/3 but less than 3,000/3.	27	16	15	27	29
Ceiling and vis greater than 3,000/3.	45	76	74	38	29

[1]Utilizing 8 Reporting Stations in Germany.[4]

ceilings between 1,000 and 3,000 feet, with visibility equal to or less than three miles, and the remaining number of days or 45 percent have ceilings and visibility greater than 3,000 feet and three miles. December is the worst single month, with 42 percent of the days having ceilings and visibilities below 1,000 feet and three miles. The impact of this weather on airborne FAC operations will be investigated in Chapters III and IV.

One of the keys to a successful mobile defense is selecting key terrain locations along major avenues of approach that will allow maximum observation and engagement time of advancing enemy armor units. While this may be more critical to ground units, it is still absolutely essential for the ground FAC to be employed in similar locations and situations. An excellent study revealing some of the key terrain characteristics found in Germany has been distributed by the U.S. Army Foreign Science and Technology Service. While it deals primarily with the employment of ground based antitank weapons, much of the information can be directly related to the operation of ground FACs.

> According to the survey, about 30 percent of the ground is covered with wood, 7 percent with towns and industrial plants, so that other ground cover included--waters, swamps, etc.--almost 40 percent of the total

> area drops out at least for concentrated tank movement by an attacker.
>
> If one adds the area which makes tank movements impossible because of the ground shape--especially slopes--which prohibit uninterrupted attacks or aggravate them because of fundamental, tactical reasons, at least 50 percent of unsuitable area remains for the enemy with tanks.
>
> The different types of terrain are usually so concentrated or dispersed that there are large areas which [simplified] can be regarded as favorable for tanks, suitable with limits, or unfavorable for concentrated tank actions.[5]

Once the terain that will support an armored advance is determined, then defensive positions must be established that will offer the most advantageous observation sites. An armored unit moving at 12 Km/h, sighted at 200m, will be in view for one minute. The same vehicle sighted at 1,000m will be in view for five minutes, however, if the terrain is open and the tank is moving at 36 Km/h, it will be in view for approximately 1.7 minutes from 1,000m. At 36 Km/h sighted at 500m the time is cut to approximately 48 seconds. These times are extremely critical to either a ground FAC or an antitank gunner. A review of the following chart, which is based on the average atmospheric conditions encountered in Southern Germany in the winter, will show that the weather is a significant factor even in ground visibility.

RANGE OF SIGHT[6]

0-500m = 54 percent
500-1000m= 9 percent
over 1000m= 37 percent

By extracting small bits of information from all the preceeding chargs, it is easy to see just how difficult it is going to be to stop advancing armor units. The airborne FAC will be faced with ceilings and visibilities below 1,000'/3 miles up to 42 percent of the time during December. The ground FACs visibility will be limited to less than 1,000m during much of the winter, plus he must contend with armor units that may be in sight for less than two minutes.

SUMMARY

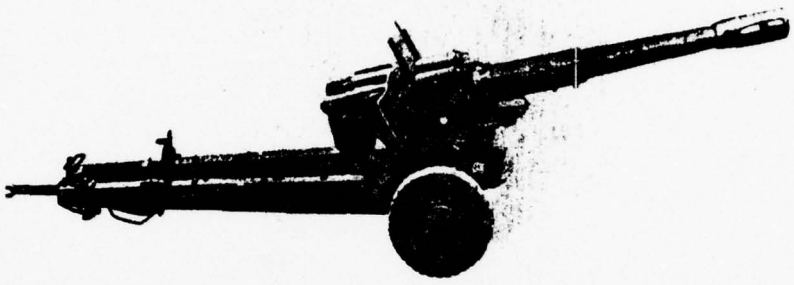
The purpose of this chapter was to show a possible scenario for a conflict in Central Europe. No attempt was made to prove the preceding pages contained all the doctrinal and tactical possibilities. There is no way to accurately determine the exact course of a battle, the exact number and type of Soviet divisions, what the weather will be during any given period, or where the battle will be fought. This chapter presents the current Soviet threat, what their weapons are, and how they might use them. Whether we're properly trained and equipped will be discussed in the following chapters.

SOVIET BRDM

The Soviet BRDM amphibious reconnaissance vehicle is fully armored. It carries a crew of two plus five passengers and has a range of approximately 310 miles. It carries a 7.62mm machinegun and can be modified to serve as an antitank missile carrier, command vehicle, or chemical-radiological reconnaissance vehicle.

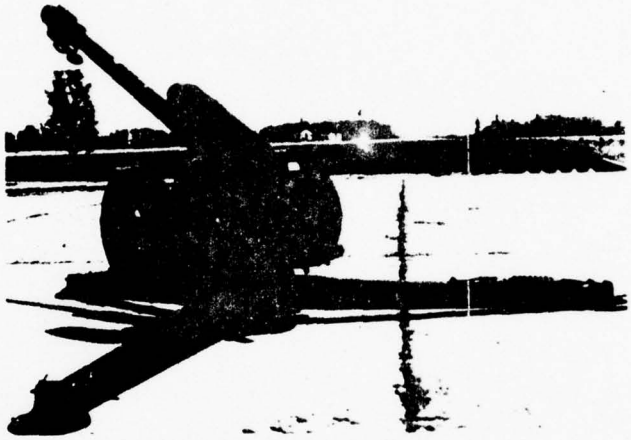
SOVIET BMP

The Soviet BMP combines the features of a light tank, antitank guided missile carrier, and amphibious, armored personnel carrier. It carries a crew of three plus eight infantry passengers who can fight from firing ports or dismounted. It is armed with a 73mm gun which fires a fin-stabilized HEAT projectile capable of attacking medium tanks up to 1,000 meters. It has a cruising range of approximately 310 miles.



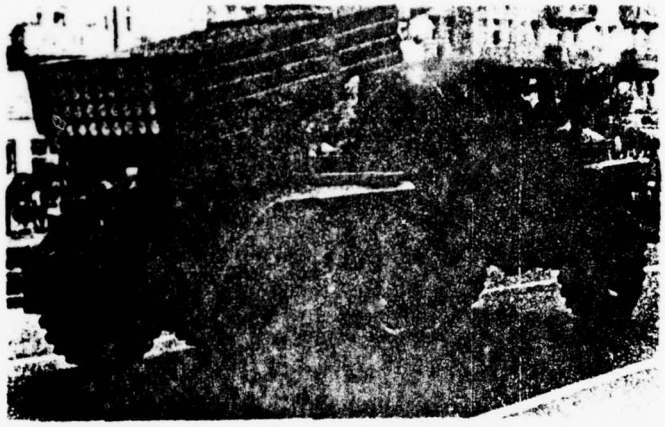
SOVIET 152MM GUN/HOWITZER

The Soviet 152mm gun/howitzer has a maximum range of 17,000 meters. It may be found in artillery units of the motorized rifle division and has a rate of fire of four rounds per minute. A self-propelled version is being introduced.



SOVIET 122MM HOWITZER

The Soviet 122mm howitzer has a maximum range of 15,300 meters. It may be found in either the tank or motorized rifle division and has a rate of fire of seven to eight rounds per minute. A self-propelled version is being introduced.



SOVIET 122MM ROCKET LAUNCHER

The Soviet 122mm multiple rocket launcher has a range of up to 20,500 meters. It fires a total of 40 rockets and has a reloading time of 10 minutes. It is found in the tank and motorized rifle divisions.

CHAPTER II

ENDNOTES

[1]United States Army Intelligence Threat Analysis Detachment (USAITAD) Report No. 14-U-76, Military Operations of the Soviet Army (Arlington, Virginia: 25 May 1976), p. 6.

[2]Associated Press Dispatch, Kansas City (Missouri) Times, November 12, 1976, p. 4, cols. 1-4.

[3]USAITAD Report No. 14-U-76, op. cit., figure 4-2, p. 85.

[4]U.S. Congress, Senate, Special Subcommittee on Close Air Support. Hearings Before the Special Subcommittee on Close Air Support. (Washington: Government Printing Office, 1972), p. 48.

[5]U.S. Army Science and Technology Center, The Terrain of Western Europe as the Basis of an Antitank Defense, October 1973.

[6]Ibid., p. 5.

CHAPTER III

BACKGROUND

During the war in Southeast Asia, thousands of forward air controllers were trained by the 549th Tactical Air Support Training Squadron (TASTS) in Florida. Throughout the course of the war, tactics and techniques were constantly updated to meet the ever changing threat and requirements. Instructor Pilots (IP's) were almost always selected from FACs returning from Southeast Asia, and it was not unusual for an IP to have 800-1,000 hours of combat time. There was an excellent ratio of instructors who had flown both close air support and interdiction sorties. Since the techniques for these two types of missions varied considerably, an effort was made to match instructors with a specific expertise to the students who required that expertise. Students who had previous experience in fighter aircraft generally were assigned to South Vietnam where they would control primarily CAS sorties. Non-fighter qualified students generally went to Thailand where they controlled interdiction missions along the Ho Chi Minh Trail.

The training conditions present around Hurlburt Field, Florida, the location of the 549th TASTS at that time, were almost ideal. There were several scorable and tactical ranges available, and the heavily wooded terrain was similar to that

encountered in much of Southeast Asia. Instructors were highly experienced FACs who could develop scenarios that would closely match the situations the student FACs would soon encounter. This realistic training provided by a cadre of experienced FACs contributed significantly to the rapid attainment of combat-ready status once the FACs reached their end assignments.

The training provided today is conducted by FACs with varying degrees of experience. This statement in no way reflects on their capabilities; however, the number of instructors available who have experience in Europe is limited. Also, the flat terrain in central Florida does not resemble Central Europe. These two factors are significantly different from the conditions experienced during initial FAC training conducted at the height of the Southeast Asian conflict, and any deficiencies in training must be overcome when the FAC reaches his end assignment.

AIRBORNE THREAT

Before examining the current airborne and ground training received by FACs, a review of the threat existing in Central Europe is necessary. Since the threat to ground forces was covered in Chapter II, this review will be limited to the threat to airborne FACs. It will also be limited to the capabilities of the OV-10, the only FAC aircraft currently employed in Central Europe, and the surface-to-air threat. The air-to-air threat for the OV-10 will not be discussed since the OV-10 has virtually no capabilities in the air-to-air role and must rely on defensive techniques or cover from

fighter aircraft.

A review of Table 2 and Figure 3 will reveal the threat is indeed formidable even to a highly sophisticated, fast moving fighter aircraft. For the OV-10, with its very limited Radar Homing and Warning (RHAW) equipment and slow speed, successful operation may be impossible.

Table 2

Surface-to-Air Missiles[1]

MISSILE	NAME	SLANT RANGE (KM)*	LEVEL OF PROTECTION
SA-2	GUIDELINE	45	High Altitude
SA-3	GOA	6-22	Medium-Low Alt.
SA-4	GANEF	70	Medium-High Alt.
SA-6	GAINFUL	30-35	Low Altitude
SA-7	GRAIL	3.5	Low Altitude
SA-8	GECKO	10-15	Low Altitude
SA-9	GASKIN	7	Low Altitude

*Exact ranges are classified.

In addition to the weapons listed in Table 2, the entire line of Soviet small arms and antiaircraft weapons pose a considerable threat to the airborne FAC.

> Probably the most formidable of these weapons is the ZSU-23-4 self-propelled 23mm antiaircraft gun system that uses the gun-dish radar for both target acquisition and fire control. The weapon's rate of fire is 4,000 rounds per minute, while its maximum effective range against aircraft is 3,000 meters. One of its primary roles is to cover the dead zone of the SA-6.[2] [See Picture 7.]

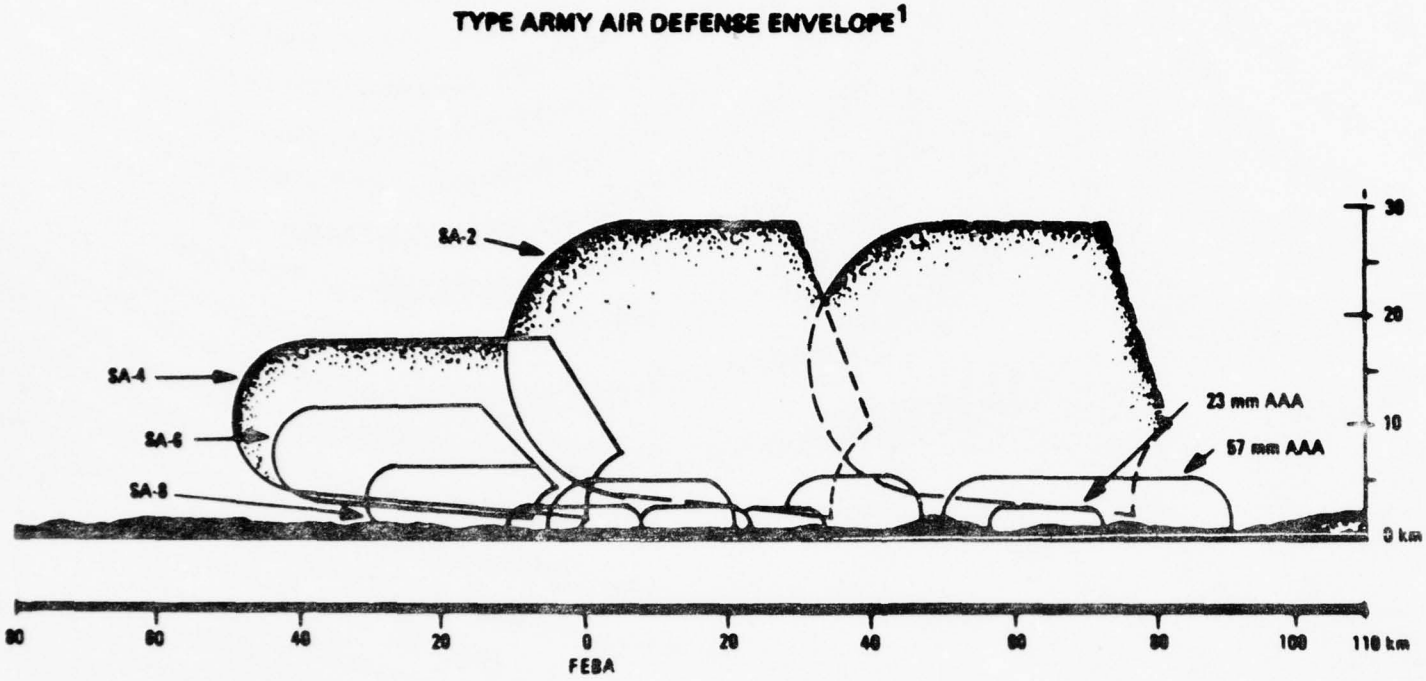


Figure 3. Soviet Army Air Defense Envelope.

Since the exact deployment of the entire Soviet array of surface-to-air weapons is unknown, it is logical to assume that no single attacking unit will possess all of these weapons. There will, however, be a sufficient number to severely tax the limited capabilities of the OV-10.

FAC TRAINING (AIRBORNE)

Airborne training in the OV-10 is currently conducted by the 549th TASTS at Patrick AFB, Florida. The training is conducted in the following different areas: Transition or Aircraft Familiarization, Instruments, Formation, Navigation/ Visual Reconnaissance, Ordnance Delivery, Air Strike Control, and Tactics. Since tactics and air strike control are the only areas peculiar to an operation in Central Europe, this discussion will be limited to these subjects.

Students are currently scheduled for approximately 29 missions or flights totaling 57 hours of flight time. Due to air aborts, range cancellations and makeup sorties, each student will receive approximately 60 to 63 hours of flight time. Included in this total are four actual FAC sorties where the student is allowed to control strike aircraft,* and two combat mission profile (CMP) sorties. The CMP sorties are flown late in the training cycle and are designed to

---

*NOTE: If actual fighter aircraft i.e., F-4, A-7, A-37, are not available, other OV-10s will assume this role and deliver ordnance.

provide a comprehensive test of the student's capabilities in low-level navigation, threat avoidance tactics, airstrike control, coordination of suppressive artillery fire and ground/airborne FAC coordination. The following excerpts from the training syllabus provide the mission description and hours flown for missions FAC-1 through FAC-4 and CMP 1/2:[4]

* * * * * * * *

Missions	Descriptions	Hours
FAC-1	Airstrike Control Dual, On Range (Low Threat)	2.0
	Munitions O2-3, OV-3	
	a. Target Location and Identification	
	b. Rendezvous	
	c. Briefing	
	d. Target Marking	
	e. Observation Positioning	
	f. Control of Fighter Flights	
	g. Damage Assessment	
	NOTE: The fighters for this mission will be a minimum of two O-2A, OV-10 or actual fighters on range with ordnance. The Instructor Pilot will demonstrate each item listed above and then allow the student to perform it.	

Mission	Description	Hours
FAC-2	Airstrike Control Dual, on Range (Low Threat)	2.0
	Munitions 02-3, OV-3	
	a. Target Location and Identification	
	b. Rendezvous	
	c. Briefing	
	d. Target Marking	
	e. Observation Positioning	
	f. Fighter Control	
	g. Damage Assessment	
FAC-3	Airstrike Control - Dual on Range (Intermediate threat, i.e. 14.5mm to 57mm and short range IR SAMS)	2.0
	Munitions: 02-3/OV-3	
	a. Target Location and Identification	
	b. Rendezvous	
	c. Briefing	
	d. Target Marking (Standoff)	
	e. Fighter Control (Standoff)	
	f. Damage Assessment	
	This mission will be flown with tactical fighters or OV-10s. FAC standoff marking and controlling will be exclusively employed the entire mission. Type and location of simulated air defense weapons will be identified by the IP in the flight briefing and by the simulated/actual ground FAC during the mission. The student will be downgraded, as appropriate, for failing to remain beyond the tactical range of simulated air defense weapons.	

Mission	Description	Hours
FAC-4	Airstrike Control - Dual On Range (High Threat, i.e., radar AAA radar SAMS)	2.0
	Munitions; 02-3/OV-3	
	a. Target Location Identification	
	b. Rendezvous	
	c. Briefing	
	d. Target Marking (Pop Up and Standoff)	
	e. Fighter Control (Pop Up)	
	f. Damage Assessment	
	This mission will be flown with high speed fighters or OV-10s. One fighter or OV-10 alone may fulfill the fighter event because simultaneous pop up maneuvers of the fighter(s)/OV-10(s) and the FAC will be accomplished. Mission will be designed to remain beyond short range SAMS and AAA guns and below radar SAM coverage. The student will be downgraded, as appropriate, for failing to remain outside of defense parameters. Multiple high threat targets will be used simulating situations in which both pop up and standoff marking will be used.	
CMP 1/2	Combat Mission Profile (Dual on range)	2.0
	Munitions: 02-3/OV-3	
	a. Navigation/Visual Reconnaissance on pre-planned routes (Locating, plotting targets)	
	b. Tactics - High, medium, low threat	
	c. Airstrike Control (Preplanned/ Immediate)	
	d. Simulated or actual ground FAC	
	e. Coordination of suppressive artillery fire.	

Mission	Description	Hours
	NOTE: This mission is designed to simulate an actual combat mission to include a frag order, intelligence study, preplanned targets, ground FAC coordination, etc. Pop-up and standoff marking will be practiced on these missions. Low threat tactics should also be included. Airstrike control may be accomplished with fighters or OV-10s on range with ordnance.	

The FAC and CMP sorties, plus the final flight evaluation, provide the student with approximately 14 hours of airborne FAC training. This training is designed to allow the student to attain mission ready (day only) status at the completion of the entire course which takes approximately 49 training days. Additional training designed to upgrade the FAC to an operational status will be provided by the unit when the FAC reaches his final destination.

FAC TRAINING (GROUND)

Training in ground FAC procedures provided to a FAC student is practically nonexistent in the initial portion of the training program. The Tactical Air Command (TAC) Air Ground Operations School (AGOS) located at Hurlburt Field, Florida, does provide limited information, primarily in a classroom environment. Each student is currently allowed to control a simulated airstrike during a one-day field exercise; however, this experience is not repeated until the FAC reaches his final assignment. There is no attempt to integrate ground

FAC operations in the FAC course provided by the 549th TASTS.

Training in ground FAC operations provided by the 20th Tactical Air Support Squadron (TASS), located in Germany, is limited to a four to five day period during each quarterly training cycle. Each FAC assigned to support a particular Army unit will spend this time actually working with the unit in a ground FAC role. This training is invaluable, although extremely limited, and the FAC's expertise is increased after each training cycle.[5]

FAC TACTICS

Before exploring the actual unit authorizations and assignments for FACs, a review of FAC tactics and responsibilities is necessary. For simplicity's sake, we can assume the FAC's responsibilities in the close air support role are to provide close, accurate airborne fires in support of ground units while providing as much safety as possible for both the strike aircraft and himself. The tactics he employs, however, depend upon the threat, the existing situation, the terrain, the weather, and both aircraft and personal capabilities and limitations.

> Although the OV-10 does not have some of the more modern characteristics of the new tactical fighters, it does have certain qualities that will allow it to survive in a medium to high threat environment. The fact that the OV-10 is a fully aerobatic, highly maneuverable aircraft with good G capability makes it survivable against many threats. In Southeast Asia (SEA) the OV-10 successfully countered or evaded the SA-2, SA-7, and AAA up through 85mm. In the European environment, the whole spectrum of Soviet threats should be anticipated and planned for.

> Airspeed, G-capability, turn radius, capability to climb or descend, altitude, distance from the threat, etc., must all be matched with the threat in question. Some restraints must also be placed on the aircraft's performance. For instance, the OV-10 has such a good turning capability, that when performing a defensive break against a SAM, turning too soon or with too many G's will not generate enough miss distance to negate the attack.[6]

Based on the OV-10 specifications listed in Chapter IV, and personal experience, the OV-10 possesses limited zoom capability and is relatively slow and vulnerable while exiting a target area.

THE THREAT SPECTRUM

> The FAC role was essentially created for close air support in situations where the enemy did not possess significant air defense weapons. As the SEA conflict progressed, FACs developed their own tactics to cope with increasing threats. Since then, different FAC tactics have been developed to offer a higher degree of survivability. This discussion of tactics will be broken into three areas: Low Threat, Intermediate Threat, and High Threat.[7]

LOW THREAT TACTICS

> For low threat situations, the standard SEA tactics are still valid. In this case, the FAC can provide the safety he needs by flying at altitudes/slant ranges to remain out of the tactical range of the enemy weapons. Using proper jinking techniques you can fly over the target area and either have the ground FAC/commander describe the target for you or identify it yourself. The fighters can rendezvous, directly over the FAC and the target while you brief them.[8]

INTERMEDIATE THREAT TACTICS

> Although there is no clear delineation between low and intermediate threat, the latter can include weapons from 14.5mm to 57mm guns and short range infra-red

> seeking SAMs. While these weapons are lethal for even high performance aircraft, the FAC can operate outside the slant range capabilities of these weapons, provided the combat area is not densely covered by great numbers of these weapons.[9]

To successfully operate in this environment the FAC may employ one of several methods. Probably the safest, but not necessarily most accurate method of marking a target, would be standoff marking. Using this method, the FAC would remain outside the tactical range of surface weapons and "lob" a rocket into the target area. Longer ranges would require the FAC to climb to a higher altitude, thus exposing himself to the high threat environment. Another method, the pop-up, is also available. While the pop-up is required during almost all high threat engagements, it can also be used in the intermediate threat environment when proper standoff parameters cannot be attained.

> The pop-up point (PUP) and the low-level run-in to it must be pre-planned. The PUP is approached at a minimum altitude from 15° to 90° either side of the desired final attack heading. You may need binoculars to spot your run-in references and PUP.[10]

This method does allow the FAC the opportunity to mark the target while providing a minimum amount of exposure to surface weapons. The successful use of this technique, however, relies on several factors that probably will not be available to the OV-10 FAC in Europe.

a. The PUP and run-in heading must be preplanned for the fighters and the FAC if he is to deliver an aerial mark. These factors rely on a stationary target for accuracy, and

this situation is unlikely during the early phases of a conflict, when Soviet doctrine demands rapid advancement of forces.

b. The target must be easily detected by the strike aircraft. This condition is also unlikely due to the high probability of smoke, dust and the intermingling of enemy and friendly forces in a terrain that severely limits long range observation.

HIGH THREAT TACTICS

The high threat environment will probably exist throughout the entire area of operations. This is especially true during the early stages of conflict before a successful suppression of enemy air defenses has been accomplished. We can safely assume the entire spectrum of Soviet surface-to-air weapons will be available within 30km of the Forward Edge of the Battle Area (FEBA), and most will be employed in the immediate vicinity of the FEBA.

This threat will force both the FAC and the strike aircraft to operate in the low level environment where skill, timing, and previous training will be taxed to the limit.

> In high threat areas, the ground FAC will normally request the mission. The airborne FAC may have to relay this information through electronic relay systems in the airborne command and control center (ABCCC) to the Direct Air Support Center (DASC).[11]

The ground FAC must accurately plot the target coordinates and select an identifiable initial point (IP). He will use an overlay to determine direction, distance, and

time from the IP to the PUP and target and pass this to the airborne FAC. While the fighters are enroute to the location, the ground FAC will pass the target description to the airborne FAC.

> Battlefield activity may require the airborne FAC to alter previously relayed information. If he has to re-plot the run-in he will definitely want to have a second person on board to accomplish this since most of the flight will be conducted at tree-top level. A major factor in this sequence is that the marking rocket should be hitting the ground just as the strike flight is beginning their pull-up. As a result, he must plan to hit his pull-up-point 20-30 seconds prior to the strike flight hitting theirs.[12]

This entire system is extremely difficult to accomplish under ideal training situations, and will be increasingly difficult under combat conditions. It is, however, probably the only method by which an airborne FAC in an OV-10 can hope to survive in a high threat environment. If the complexities are well understood, and the requirement for well-trained ground and airborne FACs is seen, the serious nature of the problem will become more readily apparent.

FAC AUTHORIZATIONS AND ASSIGNMENTS

Authorizations for Forward Air Controllers are currently contained in AFR 55-33 dated 31 July 1971. This regulation reflects authorizations suitable to the conflict in SEA, but not suitable for a high threat, mid-intensity conflict in Central Europe.

The following tables reflect FAC authorizations and assignments under two different circumstances. Table 3

reflects a full strength or wartime situation, and Table 4 reflects the normal or peacetime operation.

Table 3

WARTIME AUTHORIZATIONS/MANNING

TYPE TACP	GRADE	AFSC	DUTY TITLE
Corps Division	Col Lt Col	0036 1455A,B,C, or D	Corps ALO Division ALO
Corps Division	Maj Maj Maj	1455A,B,C, or D 1455H 1455J	Fighter Liaison Officer Reconnaissance Liaison Officer Airlift Liaison Officer
Brigade or Regiment	Maj Capt Capt	1455A,B,C, or D 1455A,B,C, or D 1455J	Brigade or Regiment ALO Fighter Liaison Officer Airlift Liaison Officer
Battalion or Squadron	Capt Lt or Capt	1444A,C,D, or E 1444A,C,D, or E	Battalion or Squadron ALO Forward Air Controller

SOURCE: AFR 55-33.[13]

Table 4

NORMAL AUTHORIZATIONS/MANNING

TYPE ARMY UNIT	PERSONNEL BY AFSC				
	0036	1455A,B, C,orD	1455H	1455J	1444A,C, D,orE
FIELD ARMY			INDIVIDUALLY TAILORED		
CORPS	1	1	1	1	
DIVISION		2	1	1	
BRIGADE/ REGIMENT		2	1(See Note)	1	
BATTALION/ SQUADRON					

The exact number of TACPs currently manned in Europe is classified; however, Air Liaison Officers (ALOs) are assigned at the Corps, Division, and Brigade level and are currently working full time with their respective Army units. Forward Air Controllers are assigned to a particular battalion or squadron or fighter wing and are available on an as needed basis. The FACs assigned to the fighter wings maintain aircraft currency in a fighter aircraft and are listed as augmentee FACs. While both the full time and augmentee FACs are fully qualified, the FACs assigned to the TASS are generally more experienced and are current in the OV-10 aircraft.

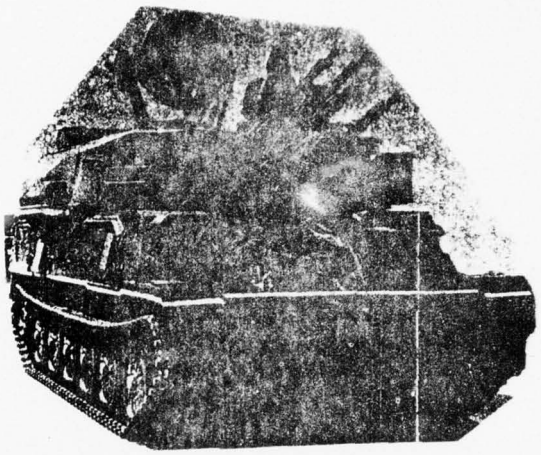
NOTE: Authorized for independent brigade/armored cavalry regiment only.

AUTHOR'S NOTE: Air Force Specialty Codes (AFSCs) have been changed and designations listed above are not current in all cases.

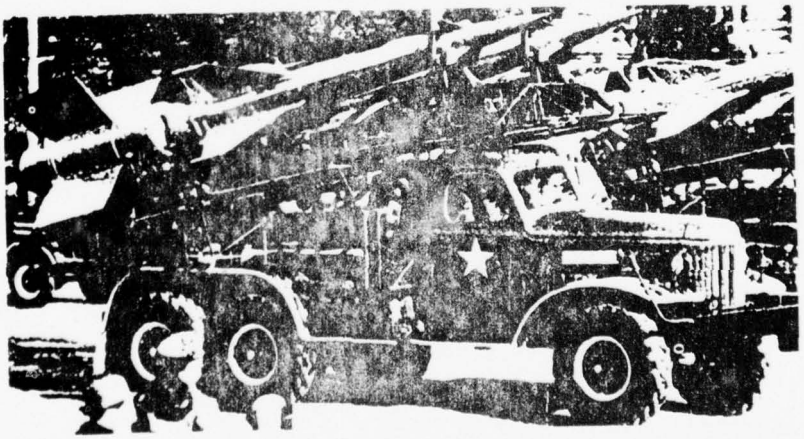
The assigning of augmentee FACs is currently required to assure a full complement of Forward Air Controllers; however, it does have some serious limitations. During a conflict, these augmentees will be required to leave their fighter squadrons and assume the role of a ground FAC or aerial observer for the airborne FAC. While authorizations in the fighter squadrons have been increased to allow for assignment of FAC augmentees, this procedure requires the fighter pilots to leave at a critical time and to perform a difficult task that they do not train for on a daily basis. Additionally, any training time they do spend on FAC operations detracts from their training as fighter pilots. According to the provisions of AFR 55-33, up to half of the FACs assigned within a major command may be augmentee FACs.

ANALYSIS/SUMMARY

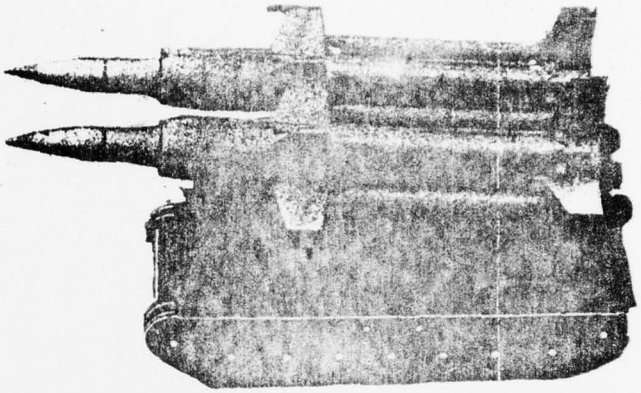
The information presented in the preceeding paragraphs reveals what may be a serious shortage of highly trained FACs during a period of conflict. Depending upon the threat and the situation, the tactics taught and practiced today could require a ground FAC, an airborne FAC, and an aerial observer to successfully complete a close air support airstrike. Based on current authorizations and manning, this number of FACs will not be available to support a short notice invasion of Central Europe. Additionally, the training provided and the tactics employed may rule out the use of airborne FACs during the initial stages of a conflict.



ZSU-23-4



SA-3 (GOA)



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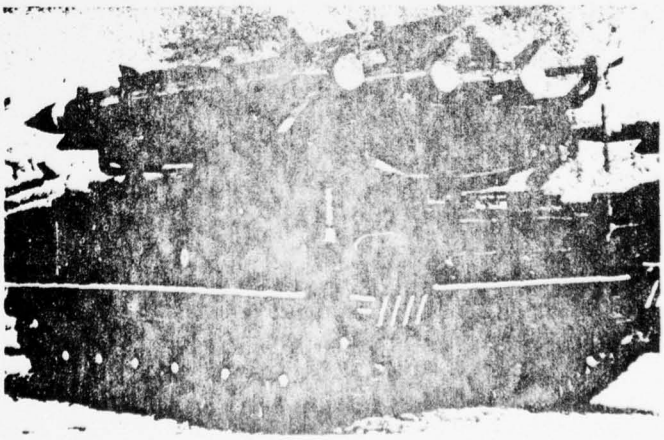
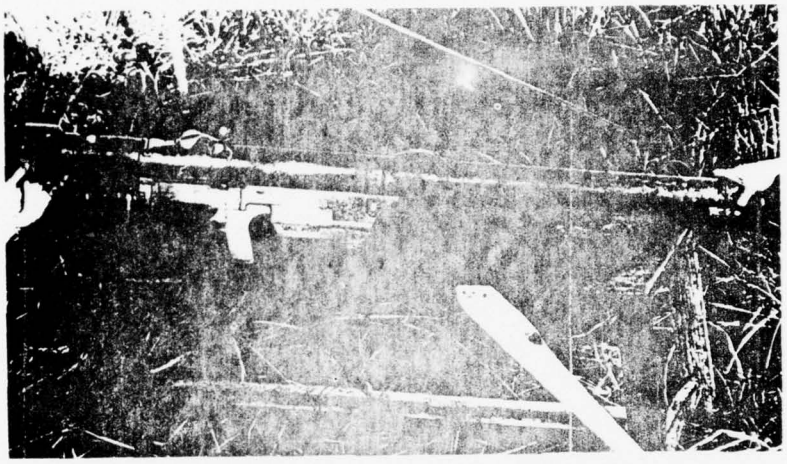
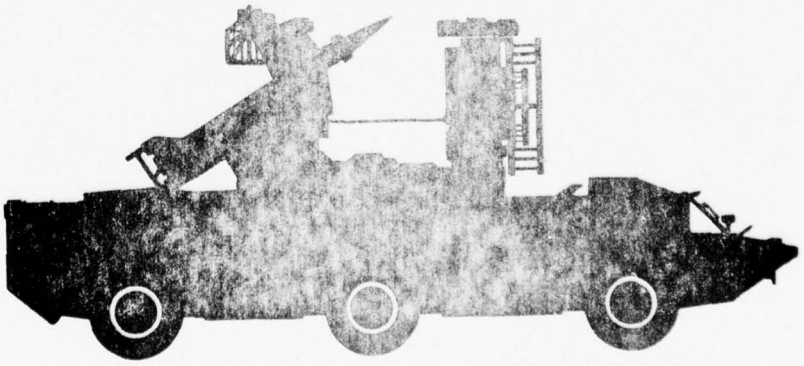


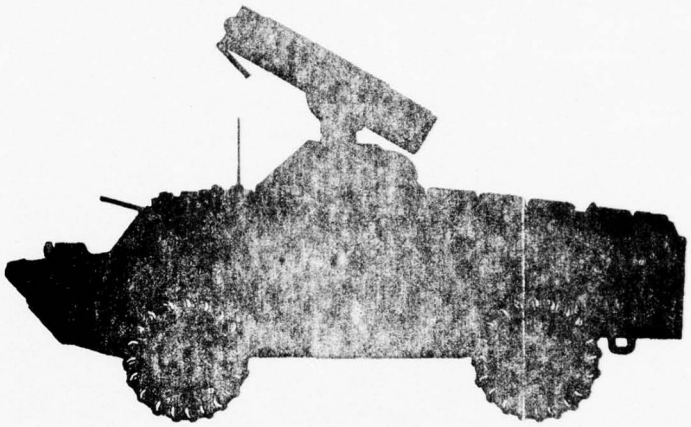
SA-6 (GAINFUL)



SA-7 (GRAIL)



SA-8 (GECKO)



SA-9 (GASKIN)

CHAPTER III

ENDNOTES

[1]Table 2 extracted from 7L6-2682-R/AET dated 28 July 1976.

[2]RB 30-2, Selected U.S. and Soviet Weapons and Equipment (Fort Leavenworth, KS.: U.S. Army Command and General Staff College, 1976), p. 54.

[3]United States Army Intelligence Threat Analysis Detachment (USAITAD) Report No. 14-U-76, Military Operations of the Soviet Army (Arlington, VA.: 25 May 1976), p. 38.

[4]Department of the Air Force, Tactical Air Command, USAF Airborne FAC Operations Training Course O-2A/OV-10 (Langley Air Force Base, VA.: 1976), pp. 22-24.

[5]Extracted from personal letter 20th TASS, December 1976.

[6]1st SOW (Special Operations Wing) Phase Manual Course OV100B00PF, FAC TACTICS (Hurlburt Field, FL.: December 1976), p. 8-1.

[7]Ibid., p. 8-6.

[8]Ibid.

[9]Ibid.

[10]Ibid., p. 8-7.

[11]Ibid., p. 8-9.

[12]Ibid., p. 8-14.

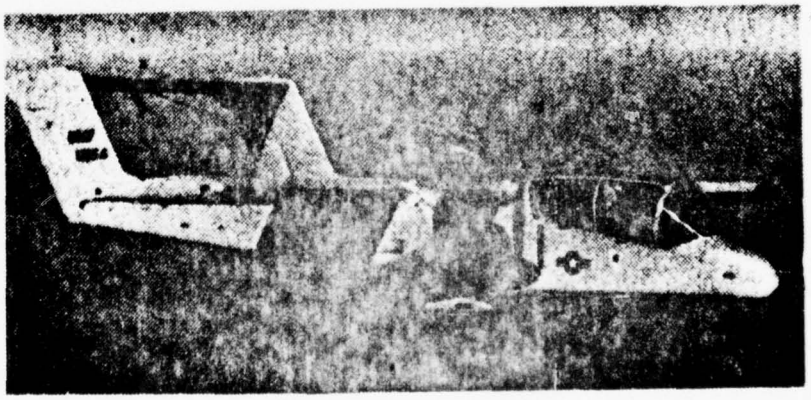
[13]AFR 55-33, Tactical Air Control Parties, dtd 26 July 1971 (Washington, D.C.: Department of the Air Force, 1971).

CHAPTER IV

FAC VEHICLES AIR AND GROUND

The following information is presented to show some of the equipment that is currently being used or may be used by both ground and airborne FACs. While there is sometimes a large disparity between cost and capabilities of the different vehicles; the use of any particular item may become situationally dependent upon either the threat or the availability of a suitable FAC platform. A tank may not be the ideal ground FAC vehicle; however, the strength of the attacking forces and the existing air defense threat may require its use.

AIRBORNE FAC VEHICLES



OV-10

Manufacturer. Rockwell International.

Power Plant. Two T76 turboprop engines with 716 shaft horsepower each.

Accommodation. Crew of two in tandem with large bubble type canopy. Zero-zero ejection seats. Dual controls standard.

Electronics. UHF, VHF, HF, FM, and TACAN are standard. Some equipped with limited RHAW capability. Secure voice and FM homing.

Armament. Two M60C, 7.62mm machineguns mounted in sponsons. Ability to carry limited free-fall ordnance or up to four rocket pods. Centerline station can carry up to 230 gallons of fuel.

T-O Run. 740 feet at normal weight. (Increases rapidly with additional weight.)

Landing Run. 740 feet at normal weight.

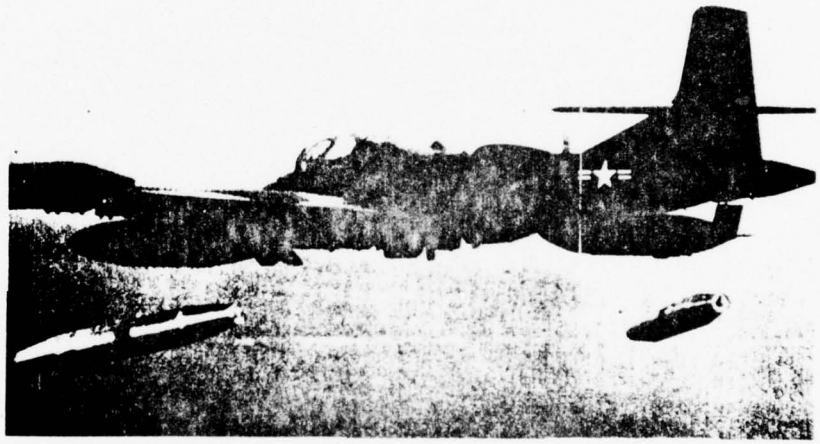
Max Speed. 244 KTS at S/L, without weapons.

Max Rate of Climb. 2,650 feet per minute at basic weight.

Endurance. Approximately 3.5 hours at low altitude with 230 gallons of external fuel.[1]

Advantages. Excellent maneuverability and visibility. Tandem seating permits use of additional observer. Good radio capability to maintain contact with ground and air forces. Good loiter capabilities. Aircraft currently available in Europe in limited numbers.

Disadvantages. Slow speed and very limited zoom capabilities make use in high intensity environment doubtful. Extremely vulnerable to surface fired weapons. Single engine operation can be hazardous during a large portion of the flight envelope. Must be used in a standoff role.



A-37B

Manufacturer. Cessna Aircraft.

Power Plant. 2 GE J85-GE-1 7A Engines rated at 2,850 lbs thrust each.

Accommodation. Side-by-side seating, fully IFR, flak curtains of layered nylon around cockpit.

Electronics. UHF and FM Radios, IFF, direction finder, TACAN, VOR.

Armament. GAU-2 B/A 7.62 minigun installed in nose. Pylon stations can carry full range of bombs/rockets or external fuel.

T-O Run. 1,740 feet.

Landing Run. 1,710 feet.

Max. Rate of Climb. At S/L and Max T/O Weight 6,990 feet per minute (FPM).

Max. Speed. 455 KTS.

Endurance. Approximately 2 hours with full external fuel and two rocket pods.[2]

Advantages. Highly maneuverable with fair visibility forward and on left side. Excellent zoom capability and single engine characteristics. Excellent weapons delivery characteristics, low IR signature.

Disadvantages. Limited visibility to the right and below. Limited range without external fuel. Assigned only to guard and reserve units.

A-10

Manufacturer. Fairchild Industries.

Power Plant. Two General Electric TF34-GE-100 turbofan engines rated at 9,065 lbs thrust each.

Accommodation. Single seat with large bubble canopy to provide all-round vision. Bulletproof windscreen. Zero-zero ejection system. Cockpit enclosed in titanium "bathtub" capable of withstanding projectiles up to 23mm. Basic design for dual control two seat version is completed.

Electronics. UHF, VHF, and FM radios. Head up display for weapons delivery. IFF, UHF, Direction Finder, TACAN, VOR/ILS, RHAW, Secure Voice, and ECM.

Armament. General Electric, GAU-8/A 30mm cannon mounted internally. External pylons allow carriage of a full range of weapons including the latest laser and electo-optically guided bombs and Maverick missiles. Maximum external load of 16,000 pounds.

T-O Run. 3,750 feet at max. T-O weight.

Landing Run. 2,045 at max. T-O weight.

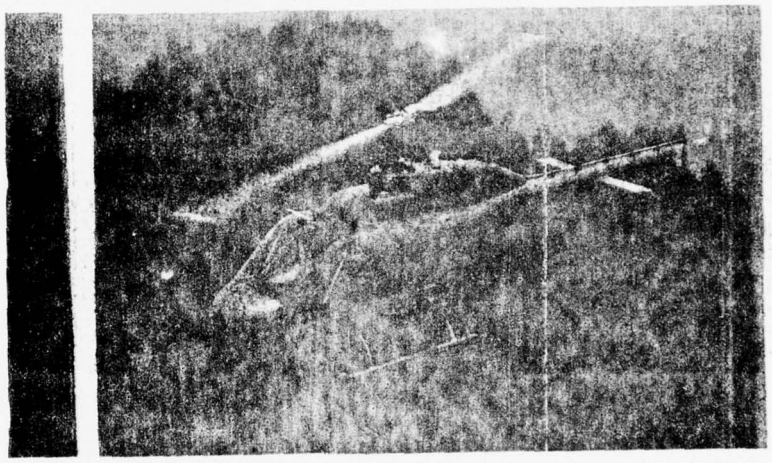
Max. Speed. 450 KTS; max. combat speed - 390 KTS.

Endurance. Loiter time of 2.? hours on reconnaissance mission with 500 mile radius.

Max. Rate of Climb. 6,000 feet per minute.[3]

Advantages. Highly maneuverable at low altitudes. Excellent survivability in high threat environment. Excellent electronic capabilities to maintain contact with ground and air forces. Unmatched loiter and weapon capabilities.

Disadvantages. Currently single seat, limited production aircraft of relatively high cost for FAC platform.



OH-58A

Manufacturer. Bell Helicopter Company.

Power Plant. Allison T63-A-700 turboshaft engine with 317 shaft horsepower.

Accommodation. Forward crew compartment seats pilot and co-pilot/observer side-by-side. Cargo compartment has provision for two additional passengers or cargo.

Electronics. FM, VHF, and UHF radios, transponder, and ADF.

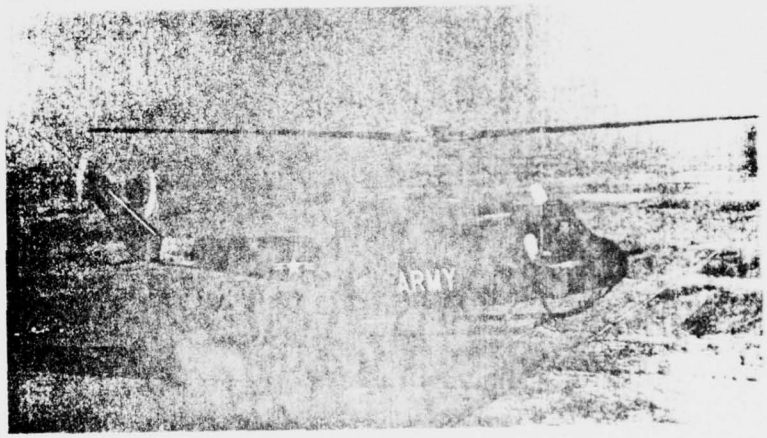
Armament. Armament kit utilizing 7.62 caliber minigun.

Max. Speed. 120 KTS.

Endurance. 3.5 hours at S/L, no reserve. (2.5 hours NOE at 30 KTS).[4]

Advantages. Radio equipment is compatible with ground and air forces. Highly maneuverable with ability to fly NOE (Nap-of-the-Earth) and use terrain masking.

Disadvantages. Vulnerable to ground fire of all types. Crew protection extremely limited. Possesses no internal capability to mark targets and must rely on artillery or smoke grenades.



UH-1

Manufacturer. Bell Helicopter Company.

Power Plant. Varies with model. The latest model, the UH-1H, has a Lycoming T-53-L-13 rated at 1400 shaft horsepower.

Accommodation. Forward crew compartment seats pilot and co-pilot/observer side-by-side. Cargo compartment provides sufficient room for 11-14 troops, extra cargo, or 300 gallons of extra fuel.

Electronics. FM, UHF, and VHF radios, IFF transponder, VOR, and direction finder.

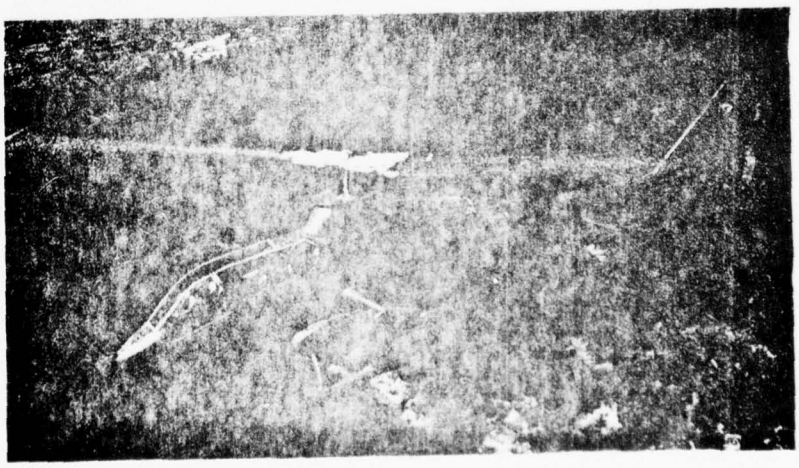
Armament. Two M-60 machineguns.

Max. Speed. 110 KTS.

Endurance. Approximately two hours without additional fuel cells.[5]

Advantages. Radio equipment is compatible with ground and air forces. Maneuverable with NOE capability in VFR weather. Good visibility and ability to use terrain masking.

Disadvantages. Vulnerable to ground fire of all types. Crew protection extremely limited. Possesses no integral capability to mark targets and must rely on artillery or smoke grenades. Slow speed and size increase vulnerability.



AH-1 COBRA

Manufacturer. Bell Helicopter Company.

Power Plant. Lycoming (Type and Power available depend upon model.)

Accommodation. Pilot and co-pilot/gunner are seated in tandem cockpits protected by NOROC armor.

Electronics. UHF, VHF, and FM radios, transponder and ADF.

Armament. Depending upon the model, armament may include the 7.62mm minigun, 40mm grenade launcher, 20mm cannon, TOW missile, or rockets.

Max. Speed. 190 KTS.

Endurance. Approximately 2.5 hours (NOE 2.0 hours.)[6]

Advantages. Highly maneuverable vehicle with excellent visibility. Capable of detecting targets and either engaging or providing marking for high performance aircraft. Extremely low silhouette and narrow profile (38") which provide excellent terrain masking capabilities. Radio equipment is compatible with ground and air forces.

Disadvantages. Loss of offensive capability during service as FAC aircraft may not be permissible. Later models require two fully trained crewmembers to maximize offensive capabilities.

YUH-60A (UTTAS)

UTILITY TACTICAL TRANSPORT AIRCRAFT SYSTEM

Manufacturer. Sikorsky Aircraft.

Power Plant. Two General Electric T700-GE-700 advanced technology turboshaft engines rated at 1,536 shaft horsepower each.

Accommodation. Pilot and co-pilot on armor protected seats. Cargo compartment can accommodate 11 passengers.

Electronics. Fully instrumented with all latest radio communication equipment. Flight director computer for precision NOE navigation and ILS approaches.

Armament. Provision for side firing machinegun.

Cruise Speed. 160 KTS.[7]

Advantages. Navigation and maneuverability capabilities are unmatched in cargo helicopters. Excellent NOE capabilities furing night and adverse weather. Crew and integral components protected by armor plating.

Disadvantages. Requires crew of two which would require FAC to observe from cargo compartment. Not yet in production and use as a FAC platform would deny Army units use for tactical mobility.

AAH-64 (AAH)

ADVANCED ATTACK HELICOPTER

Manufacturer. Hughes Helicopters.

Power Plant. Two General Electric T700-GE-700 turboshaft engines rated at 1,500 shaft horsepower, derated for normal operations to provide reserve power for combat emergencies.

Accommodation. Pilot and co-pilot/gunner seated in tandem in armor protected seats. Possesses duplication of critical components and structural resistance to small arms fire.

Electronics. Full range of the latest radio communication equipment and infrared suppression. In addition, a forward-looking infrared and visionics system developed by Hughest Aircraft Company will enable the new helicopter to operate by day or night in adverse weather.

Armament. Hughes developed 30mm chain gun, up to 8 antitank missile, and 2.75 in aerial rockets.

Cruise Speed. Estimated between 145-175 KTS.[8]

Advantages. Superior NOE and terrain masking capabilities. Excellent maneuverability in all phases of flight. Good protection against ground fire.

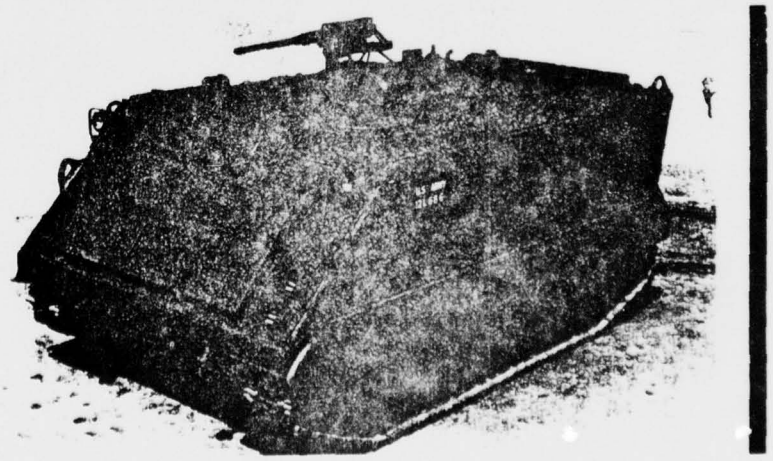
Disadvantages. Currently under development and flight testing and will not be available in quantity for several years. Use as a FAC platform would deny its employment as a critical offensive weapon.

Authors Note: While the use of helicopters as FAC vehicles may not appeal to many Air Force pilots, the Army has conducted several tests which indicate their use is not only feabible but possible. The Ansbach trials conducted in Europe pitted antitank helicopters against advancing armor units. The results indicated the helicopters could survive in this environment. The full range of surface-to-air weapons, however,

was not employed in the test. The tests conducted by the United States Army Combat Developments Experimentation Command in 1972 showed the capability existed for limited night attack by helicopters. The tests were inconclusive since adequate night observation devices did not exist, and night nap-of-the-earth flying and navigation were limited. These tests should be expanded to include the latest state-of-the-art equipment and USAF forward air controllers.

GROUND FAC VEHICLES

The following vehicles are considered as possible ground FAC platforms. With the exception of the MRC-107/108, the standard FAC communication central, all of the vehicles would require some modification in communication capabilities to provide the FAC a full range of radio equipment.

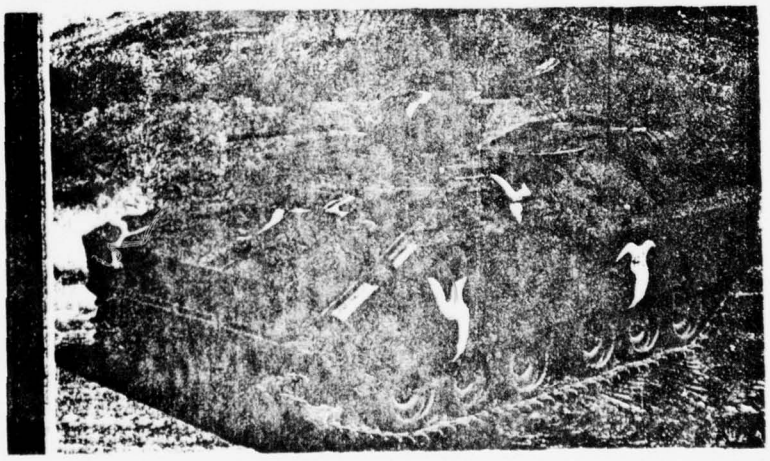


M113A1

The M113A1 is the primary means of transportation for infantry personnel in armored and mechanized units and may be used in all terrain areas as a fighting vehicle with modifications such as belly armor, commander's cupola, shields and pedestal mounts (for the M-60 machinegun). The M113A1 is diesel powered and has a cruising range of 300 miles.[9]

Advantages. The M113A1 does offer light armor protection superior to the MRC-107/108, and some units have been modified to accept radio pallets used by FACs.

Disadvantages. While the M113A1 is highly maneuverable, it will not keep pace with other armored vehicles in rough terrain. Visibility for the FAC is limited.

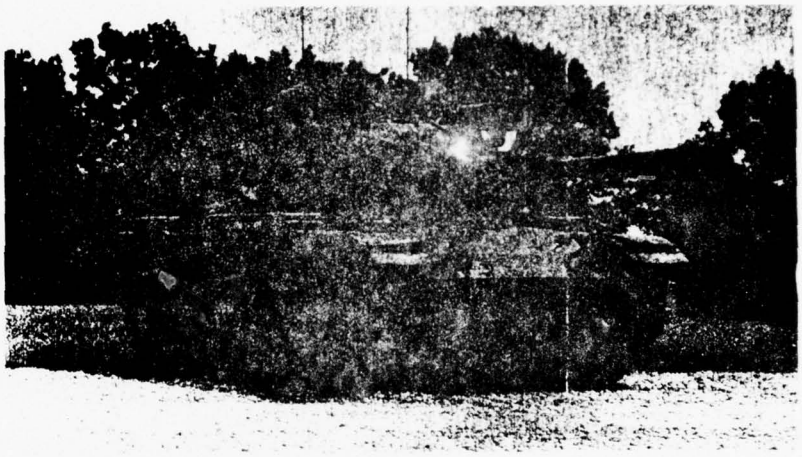


SM723 (MICV)

The MICV, currently being tested is scheduled to replace the M113A1. It is designed to increase firepower, armor, mobility, reliability, and protection for the soldier. It can seat a crew of two plus a ten man squad. It will mount a 20 to 30mm cannon as primary armament with a 7.62mm machinegun as a secondary weapon. There will be six vision blocks paired with firing ports. It will be able to keep up with tanks on the battlefield. The cruising range will be approximately 300 miles.[10]

Advantages. The MICV would provide improved mobility and armor protection to the ground FAC. Firing ports might provide sufficient vision to the FAC if the situation required operation while buttoned-up. Sufficient room is available for installation of all required communication gear.

Disadvantages. The MICV is not in full scale production and is, therefore, limited. To be used as a FAC vehicle, sufficient quantities would have to be produced and modified with the required radio equipment. Visibility is limited; however, the increased armor protection and mobility outweigh this limitation.

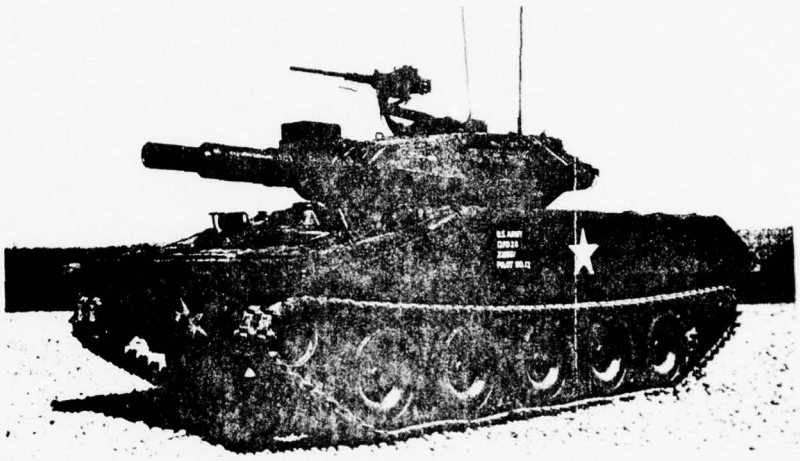


M60A1

The M60A1 is the main U.S. battle tank and is found in most tank battalions and armored cavalry regiments. It mounts a 105mm main gun and offers good mobility and armor protection. The cruising range of the M60A1 is 310 miles.[11]

Advantages. The armor protection, mobility, and self-defense characteristics of a tank are important. They would allow the FAC to operate, with restrictions, under almost any circumstances.

Disadvantages. The lack of visibility, adequate space for the FAC and his associated radio equipment, plus the limitations placed on inherent offensive capabilities of the tank, limit the use of the M60A1 as a FAC vehicle except in the most critical situations.



M551

The M551 armored reconnaissance/airborne assault vehicle is a lightweight, air-transportable, amphibious vehicle that mounts a 152mm gun launcher. It is found in all armored cavalry squadrons and has a cruising range of 370 miles.[12]

Advantages. The armor protection, mobility, and self-defense characteristics of a tank are important. They would allow the FAC to operate, with restrictions, under almost any circumstances.

Disadvantages. The lack of visibility, adequate space for the FAC and his associated radio equipment, plus the limitations placed on inherent offensive capabilities of the tank, limit the use of the M551 as a FAC vehicle except in the most critical situations.

MRC 107/108

The MRC 107/108 Communications Central is the standard FAC vehicle. It is equipped with UHF, VHF, HF, and FM radios. It is currently located in all TACPs and is a well-known and well-tested piece of equipment.

Advantages/Disadvantages. In addition to its obvious lack of armor protection, the MRC 107/108 does not have the mobility or ruggedness required to operate with an armor or cavalry unit. The communication pallet can be removed by the radio operators; however, there are no armored vehicles that are currently equipped to handle the entire package.

CHAPTER IV

ENDNOTES

[1]John W. R. Taylor (ed.), Jane's All the World's Aircraft 1975-1976 (New York: Franklin Watts, Inc., 1975), pp. 438-439.

[2]Ibid., pp. 311-312.

[3]Ibid., pp. 332-333.

[4]Ibid., pp. 268-269.

[5]Ibid., pp. 266-267.

[6]Ibid., pp. 269-270.

[7]Ibid., pp. 459-460.

[8]Ibid., p. 361.

[9]U.S. Army Command and General Staff College, RB30-2, Selected U.S. and Soviet Weapons and Equipment (Ft. Leavenworth: July 1976), p. 9.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Throughout the text of this thesis, an attempt has been made to relate the current Soviet threat in Central Europe to the capabilities of U.S. forces. The scenario and conditions presented do not represent the only possibilities that exist; they do show what could occur should the Soviet Union decide to initiate full scale hostilities in Europe. The incontestable fact is that the Soviet Union enjoys a sizeable numerical advantage in both personnel and equipment. If the United States intends to present a viable defense, we must make maximum use of our personnel, training, and equipment by employing a well prepared combined arms team.

The studies on terrain and weather reveal some of the problems affecting both the ground and airborne FAC. During the initial stages of a massive attack--when the Soviets are employing their tactics of mass, shock, and rapid movement--the FAC must contend with numerous targets that may be obscured by weather, smoke, and terrain features. Additionally, many of the targets may well be intermingled with friendly forces if the Soviet tactic of bypassing strong points is successfully employed. All of these possibilities, plus the employment of Soviet air defense weapons, should have a critical impact on our present FAC training and tactics,

the equipment that FACs currently use, and the number of trained FACs available to support U.S. ground forces. Since the USAF seriously intends to provide accurate, decisive close air support in the European environment; then substantial changes must be made in the training, in the number of FACs available, and in the equipment they use.

The Army has conducted studies using both rated and non-rated personnel as forward air controllers. Although these studies were limited in nature, they did show a capability exists for Army personnel to control high speed aircraft in airstrikes during an emergency situation.

CONCLUSION

The type and amount of training received by FACs is both inappropriate and inadequate for the European environment. The requirement to plan an effective run-in and pop-up maneuver for both the FAC and strike aircraft places almost impossible responsibilities on the FAC. This procedure may be the most effective method of striking a clearly defined, stationary target; however, no allowance has been made to enable the FAC to clearly identify a moving target that may be close to friendly forces. The amount of time allowed for the strike aircraft to positively identify an enemy target and make any necessary corrections to his delivery parameters is insufficient and could easily lead to friendly casualties. Practicing this maneuver with slow-moving FAC aircraft

performing in the strike role enables the FAC to master his basic technique, but does not allow him to improve his timing for the faster aircraft that will actually be available under normal circumstances.

Based on the expected surface-to-air threat, ground FAC operations may be the most critical element of close air support in the European environment. Training in a ground FAC situation is practically non-existent during the initial upgrade training cycle. It also does not appear to have sufficient emphasis once the FAC arrives at his final destination.

RECOMMENDATIONS

Ground FAC training should be significantly increased during both the initial upgrade phase and after the FAC arrives at his final unit. Forward air controllers should spend considerably more time with their supported units, becoming intimately familiar with the tactics used by that unit and with their primary area of operations. Ground and airborne FACs should be supported by fast-moving strike aircraft during all phases of training, and they must be familiar with the capabilities and limitations of these aircraft. Every effort should be expended to ensure FACs are equipped with the most technologically advanced equipment, such as hand held laser designators.

CONCLUSION

Even though current training manuals reflect the need for both ground and airborne FACs and for trained aerial observers, current manning does not provide for an adequate number or source of these personnel.

RECOMMENDATIONS

Training programs and manning documents should be changed to reflect the necessary increases. Spaces added to fighter units to accommodate augmentee FACs should be transferred to TACP units. If the individuals primary responsibility is to perform as a FAC during hostilities, then he should be assigned to a FAC unit where he will receive the proper quality and quantity of training. Also, selected Army personnel should be trained by USAF FACs to act as a backup should the need arise.

CONCLUSION

Due to its slow maneuvering speed, lack of zoom capability, and susceptibility to surface-to-air weapons, the OV-10 is not a suitable FAC platform for the initial phase of hostilities in Europe.

RECOMMENDATIONS

The Air Force should expand the purchase of dual place A-10 aircraft and employ them as FAC aircraft in Europe.

These aircraft would not require any significant modification and could be used in a dual role as FAC/CAS aircraft depending upon the situation and existing threat. The maneuverability, offensive capability, and survivability of the A-10 provide capabilities superior to any current FAC aircraft. In addition, the Army and Air Force should conduct further tests to determine the feasibility of placing USAF controllers in helicopters.

CONCLUSION

The use of an armored vehicle for ground FAC operations has not been standardized in method of employment, types of vehicle, or configuration. Forward air controllers do not spend sufficient time with their supported units to become intimately familiar with their assigned vehicles, and in some cases do not have armored vehicles specifically dedicated to their use.

RECOMMENDATIONS

Leaders from both the Army and Air Force should decide on a specific type of armored vehicle and ensure that it is available in sufficient, standardized numbers to support ground FAC operations. This vehicle should also be available at stateside installations supported by a FAC to ensure adequate training of personnel who may be deployed at the outbreak of hostilities. If at all possible, the Army crew

operating an armored FAC vehicle should train as an integral crew with the Air Force controller to enhance coordination and a full understanding of operational techniques. If adequately trained or augmented by trained observers, this crew could assume the responsibility for directing airstrikes should the FAC become incapacitated.

AUTHOR'S NOTE: Although the research involved in this thesis does not positively substantiate any radical change in current doctrine, I believe Army and Air Force leaders should evaluate our current close air support concepts. If a determination is made that close air support is not a viable option during the initial stages of a mid-intensity conflict in Europe, then this decision should be the basis for a concerted effort between Army and Air Force leaders to ensure ground forces are properly trained and equipped to halt the initial attack. In any case, sufficient evidence is available to substantiate additional research into the viability of close air support during a war in Europe.

APPENDIX

APPENDIX A

Ob" yedineniye	A Soviet term which refers to a major field force, such as a front or an Army.
Soyedineniye	Used by the Soviets to refer to a corps, a division, or a brigade. The components may be from a single arm or from various arms and services. The term also is used loosely for an Army.
Chast'	A Soviet term which designates any unit of regimental or smaller size that is administratively self-contained and separately numbered. Examples of this are a rifle regiment, an engineer battalion of a rifle division, and a corps signal battalion.
Podrazdeleniye	The Russian term for "subdivision." It is used to refer to a subordinate unit of a Chast'; it is any unit which cannot be fully identified numerically except by reference to the larger unit of which it is an integral part: battalions, companies, and platoons of a rifle regiment.

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